Small Business Innovation Research/Small Business Tech Transfer

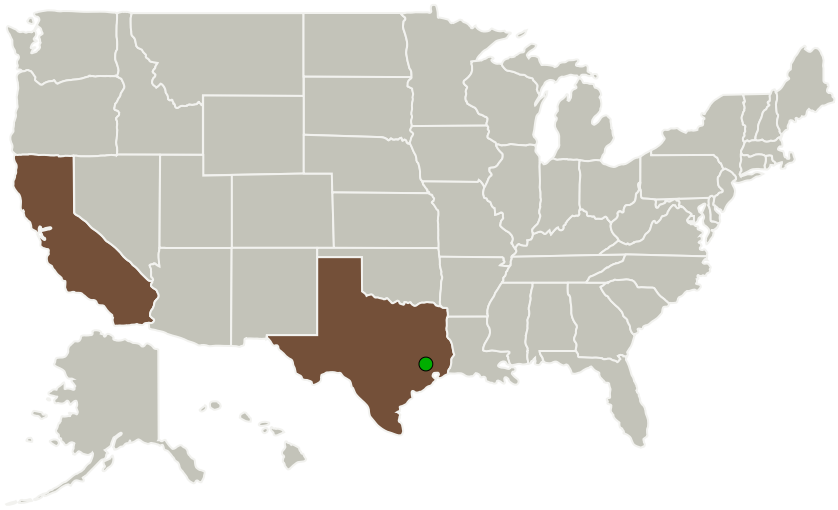
Micro-Electro-Analytical Sensor for Sensitive, Selective and Rapid Monitoring of Hydrazine in the Presence of Ammonia, Phase I

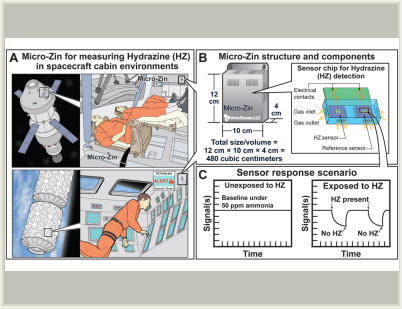
Completed Technology Project (2017 - 2017)

Project Introduction

Hydrazine, a volatile and flammable colorless liquid, is classified as a carcinogen by the US Environmental Protection Agency. It can cause chromosome aberrations and negatively affect the lungs, liver, spleen, thyroid gland, and central nervous system. NASA's existing hydrazine measurement technology is sensitive, selective and reliable, but it takes 15 minutes to collect and analyze a sample. For future missions beyond Low Earth Orbit, NASA will need a measurement system that responds within 30 seconds without any performance limitations such as lack of specificity and maintenance challenges. To address NASA needs, InnoSense LLC (ISL) proposes to develop micro-electro-analytical sensor for rapid monitoring of hydrazine (Micro-Zin) in the presence of ammonia in spacecraft cabin atmosphere (SCA) for long-term performance without maintenance. Micro-Zin builds on ISL's nanomaterial-based sensor technology and electronic data processing systems. In Phase I, ISL will design and fabricate a Micro-Zin working model. To establish feasibility, we will characterize Micro-Zin's sensitivity, selectivity, response time, and reliability. In Phase II, we will optimize sensor performance with an appropriate prototype.

Primary U.S. Work Locations and Key Partners





Micro-Electro-Analytical Sensor for Sensitive, Selective and Rapid Monitoring of Hydrazine in the Presence of Ammonia, Phase I Briefing Chart Image

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Micro-Electro-Analytical Sensor for Sensitive, Selective and Rapid Monitoring of Hydrazine in the Presence of Ammonia, Phase I

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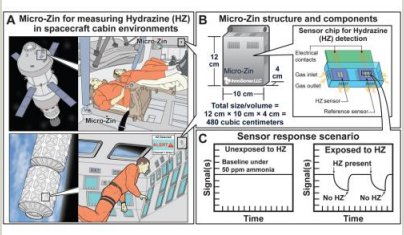
Organizations Performing Work	Role	Type	Location
Innosense, LLC	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Torrance, California
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
California	Texas

Images



Briefing Chart Image
Micro-Electro-Analytical Sensor for Sensitive, Selective and Rapid Monitoring of Hydrazine in the Presence of Ammonia, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/130256)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Innosense, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

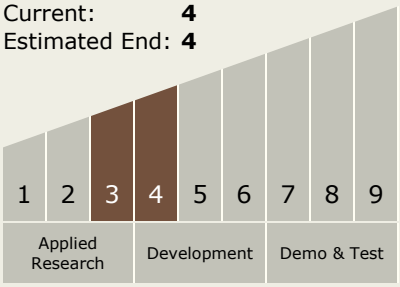
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Maksudul Alam

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.4 Environmental Monitoring, Safety, and Emergency Response
    - TX06.4.1 Sensors: Air, Water, Microbial, and Acoustic